

**AMENDMENT UNDER 37 C.F.R. § 1.111**

**Application No.: 10/031,407**

**Atty Docket No.: Q67836**

**AMENDMENTS TO THE CLAIMS**

**This listing of claims will replace all prior versions and listings of claims in the application:**

**LISTING OF CLAIMS:**

1. (currently amended): A method for producing mixed oxide nuclear fuel pellets ~~of the MOX (mixed plutonium and uranium oxide) type~~, comprising the steps of
  - preparing an U-Pu oxide blend powder having a Pu content in excess of the finally desired value,
  - preparing ~~an~~ a uranium oxide powder,
  - mixing adequate quantities of both powders in order to achieve the desired plutonium content,
  - compacting and sintering the mixture for obtaining said pellets,

~~characterized in that~~ wherein the step of preparing the uranium oxide powder involves the following sequence of substeps:

  - a) ~~preparing preparation of~~ an aqueous solution of uranyl nitrate to which between 0.5 and 2 wt% of organic thickeners are added such that the viscosity of the solution is adjusted to values between 20 and 100 centipoise,
  - b) dispersing the solution into droplets,
  - c) introducing said droplets into a hydroxide bath,
  - d) washing the resulting beads,
  - e) drying the beads by azeotropic distillation using an immiscible organic solvent,
  - f) ~~thermal treatment of~~ thermally treating the beads in an oxidising atmosphere,
  - g) ~~thermal treatment~~ thermally treating in a reducing atmosphere.
2. (currently amended): A The method according to claim 1, ~~characterized in that~~ wherein the step of preparing an U-Pu oxide blend powder consists in milling and mixing adequate quantities of uranium oxide and plutonium oxide.

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3. (currently amended): A The method according to claim 1, ~~characterized in that~~ wherein the step of preparing the U-Pu oxide blend powder involves the following sequence of substeps:
  - a) preparing ~~preparation of~~ an aqueous solution of uranyl-plutonium nitrate to which small amounts of organic thickeners are added in order to adjust the viscosity of the solution to values between 20 and 100 centipoise,
  - b) dispersing ~~dispersion of~~ the solution into droplets,
  - c) introducing said droplets into a hydroxide bath,
  - d) washing the resulting beads,
  - e) subjecting the beads to an azeotropic distillation using an immiscible organic solvent,
  - f) ~~thermal treatment of~~ thermally treating the beads in an oxidising atmosphere,
  - g) ~~thermal treatment~~ thermally treating in a reducing atmosphere.
4. (currently amended): A The method according to ~~anyone of the preceding claims~~ claim 1 or 3, ~~characterized in that~~ wherein in substep a) the organic thickeners are selected among ~~METHOCEL~~ water-soluble cellulose polymer, dextran and polyvinyl alcohol.
5. (currently amended): A The method according to ~~anyone of the preceding claims~~ claim 1 or 3, ~~characterized in that~~ wherein in substep c) the hydroxide bath consists of ammonia.
6. (currently amended): A The method according to ~~anyone of the preceding claims~~ claim 1 or 3, ~~characterized in that~~ wherein in substep f) the ~~thermal treatment~~ thermally treating in an oxidising atmosphere is performed at about 400°C and in air.
7. (currently amended): A The method according to ~~anyone of the preceding claims~~ claim 1 or 3, ~~characterized in that~~ wherein in substep g) the ~~thermal treatment~~ thermally treating in a reducing atmosphere is performed at about 800°C, the reducing atmosphere containing an inert gas with a hydrogen content between 1 and 6%.

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8. (currently amended): A The method according to ~~anyone of the preceding claims~~ claim 1, characterized in that wherein compacting of the powder mixture into pellets is obtained by applying a pressure of between 200 and 600 MPa.
9. (currently amended): A The method according to ~~anyone of the preceding claims~~ claim 1, characterized in that wherein the sintering of the pellets takes place at a temperature above 1200°C, ~~preferably between 1600 and 1700°C~~, and in a humidified Ar/H<sub>2</sub> atmosphere, the hydrogen content lying between 1% and 6% and the ratio between the partial pressures of hydrogen and water vapour being selected between 20 and 60.
10. (currently amended): A The method according to ~~anyone of the preceding claims~~ claim 1, characterized in that wherein before mixing adequate quantities of both powders, the UO<sub>2</sub>-powder is sieved in order to retain only beads with diameters between 20 and 50 µm size.
11. (new): The method according to claim 9, wherein the sintering of the pellets takes place at a temperature between 1600 and 1700°C.